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DEPARTMENT OF THE ARMY
Fort Detrick
Frederick, Maryland

ON THE DIAGNOSIS OF ANTHRAX

[Following is a translation of an article by Dr. H. Lausecker of the General Public Hospital in St. Pölten, Austria, in the German-language periodical Hautarzt (Skin Doctor), Vol 8, No 12, December 1957, page 557.]

The clinical picture of anthrax is usually quite characteristic, but diagnosis demands evidence of the excitant in culture or from the swab. In fresh and untreated carbuncles this is easily done; one usually finds the bacillae in swab-specimen and culture during the first week of sickness. In the second week they are often found only in culture (Berde), and in older foci they are almost always lacking. It is thus explicable that La Boccetta could isolate no anthrax bacillae in 16% of all cases and had to base diagnosis solely on clinical evidence and medical history.

Observations

Case 1. A 59 year old butcher with no significant medical history; removed anthrax 15 days before from an animal killed because of anthrax in order to send it out for bacteriological examination. A few days later an eruption appeared on each forearm and swelled notably after application of salve. Highest temperature during sickness was 37.7°.

On the extensor-side of each forearm was a typical anthrax carbuncle the size of a shilling with peculiar blue-black colored necrotic center surrounded by yellowish border hardly a millimeter wide in a reddened area; the accompanying oedema is moderate and there is no swelling of regional lymph nodes; the man has no fever and feels well. Anthrax bacillae are not found in repeated swabs and cultures; the Ascoli precipitation, executed twice with excised scabs, is clearly positive. BB o. B., S. Wa.R.: negative, Skg. 9/20, usual lab tests o.B., paper electrophoresis: total protein 7 g.%, of which albumin 50.3%, globulin a - 10.7%, - 18%, - 21%. Local boracic ointment bandage but no other treatment; complete healing of both carbuncles in about five weeks.

Case 2. A 55 year old farmer performed 45 days earlier the necessary slaughtering of a steer afflicted with anthrax; three days later noticed an

eruption on the base joint of the left index finger, followed by notable growth of the abscess in the next days and appreciable swelling on the back of the hand. Fever for two days at 38.5°, medical treatment with Burow bandages, about 15 Prontosil tablets in five days, no injections; very slow reduction of swelling and disappearance of the "abscess."

On the joint of the finger was a necrosis the size of a pea surrounded by a slightly reddened and swollen area. The necrosis was easily eliminated; no anthrax bacillae were found in swab or culture. Cold precipitation with the necrotic tissue was negative. BB o. B., S. Wa.R.: negative, Skg. 3/10, no other significant findings.

In the two cases in which carbuncles appear on two men after necessary slaughtering of anthrax-afflicted animals, healing is spontaneous. The few Prontosil tablets used in one case cannot be viewed as a decisive treatment for the further course of the illness. In both cases, identification of anthrax bacillae was no longer possible; in one case the diagnosis was assured by the precipitation method.

In the Ascoli precipitation, a standard method for identification of anthrax in veterinary medicine, boiled or cold sections of the organs to be tested are used. The test identifies an antigen that is released in the destruction of bacteria, a polysaccharide. The appearance of the reaction is determined by the precipitinogen content of the material tested. Thus a negative result does not have the same meaning as a positive one. In general the reaction is highly specific, except that material containing a large amount of anthrax-like bacteria can influence the result, conditions that do not apply with carbuncles on humans.

As is known in veterinary medicine, the choice of test material has to be made with great care. No objection can be made to the sharp excision of the bacteria-free scab, an operation free of danger, but the test must involve a sufficient quantity of tissue to support a positive finding. The precipitation can be used to clarify ambiguous cases of anthrax.

Anthrax may heal without treatment, the carbuncle often being viewed as a defensive reaction of the organism, but this favorable outcome should not be awaited and therapy should begin with all intensity. This also explains why all authors stress spontaneous healing of anthrax carbuncles although such cases are seldom found described in the literature.

Summary

Two men are infected during slaughter of anthrax-afflicted cattle. The carbuncles heal without specific treatment. In both cases anthrax bacillae are no longer identifiable, but the precipitation method produces a clear positive finding with the carbuncle scab of one of the men. This indicates the use of the Ascoli precipitation to clarify ambiguous cases of anthrax.

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